Measuring Addiction with DSM Criteria

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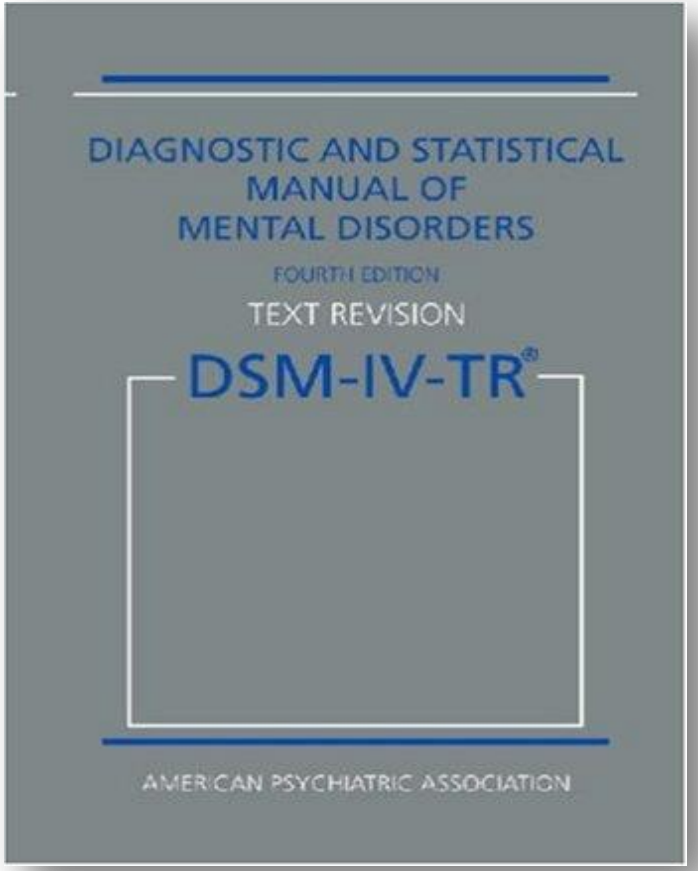
Two Main Topics

1. DSM-5 definition of addiction and its empirical basis
2. PRISM-5 measure of DSM-5 addiction

DSM-IV Substance Dependence and Abuse

- Criteria first published in 1994
- Text-only update in 2000
- Used worldwide for diagnosis, education, research and reimbursement purposes for 19 years
- Note: DSM-IV “abuse” differs from term used in present opioid study
- Diagnoses widely used in research on:
  - Genetic etiology
  - Pharmacology trials
  - Neuroimaging studies
  - Epidemiologic rates



Aimed to incorporate, build on advances in knowledge since 1994

- **Process, sequence of events**
  - Specific workgroups convened in 2007
  - SUD workgroup met every two weeks by call, 3x/yr in person
  - Reviewed literature, analyzed existing data
  - Presentations (>30) to professional groups for input
  - Draft criteria posted x2 on DSM-5 website, >500 comments
  - Review of workgroup recommendations, late 2011
  - Criteria & text finalized 12/2012, publication 05/2013

DSM-5 Substance Disorder Workgroup members

Charles O'Brien, M.D., chair
Mark Ariacombe, Ph.D.
Guilliame Borges, Ph.D.
Katherine Buchholz, Ph.D.
Alan Budney, Ph.D.
Thomas Crowley, M.D.
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Substance Use Disorder Criteria: DSM-IV

Diagnostic Criteria	Abuse	Dependence
Failure to fulfill major role obligations	X	--
Hazardous use	X	--
Substance-related legal problems	X	--
Social/interpersonal substance-related problems	X	--
Tolerance	--	X
Withdrawal	--	X
Persistent desire/unsuccessful efforts to cut down	--	X
Using more or over for longer than was intended	--	X
Neglect of important activities	--	X
Great deal of time spent in substance activities	--	X
Psychological/Physical use-related problems	--	X
Diagnostic Threshold	**1+ criteria**	**3+ criteria**

1+

3+

American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2000.

Problems with DSM-IV Substance Abuse and its Hierarchical Relation to Dependence

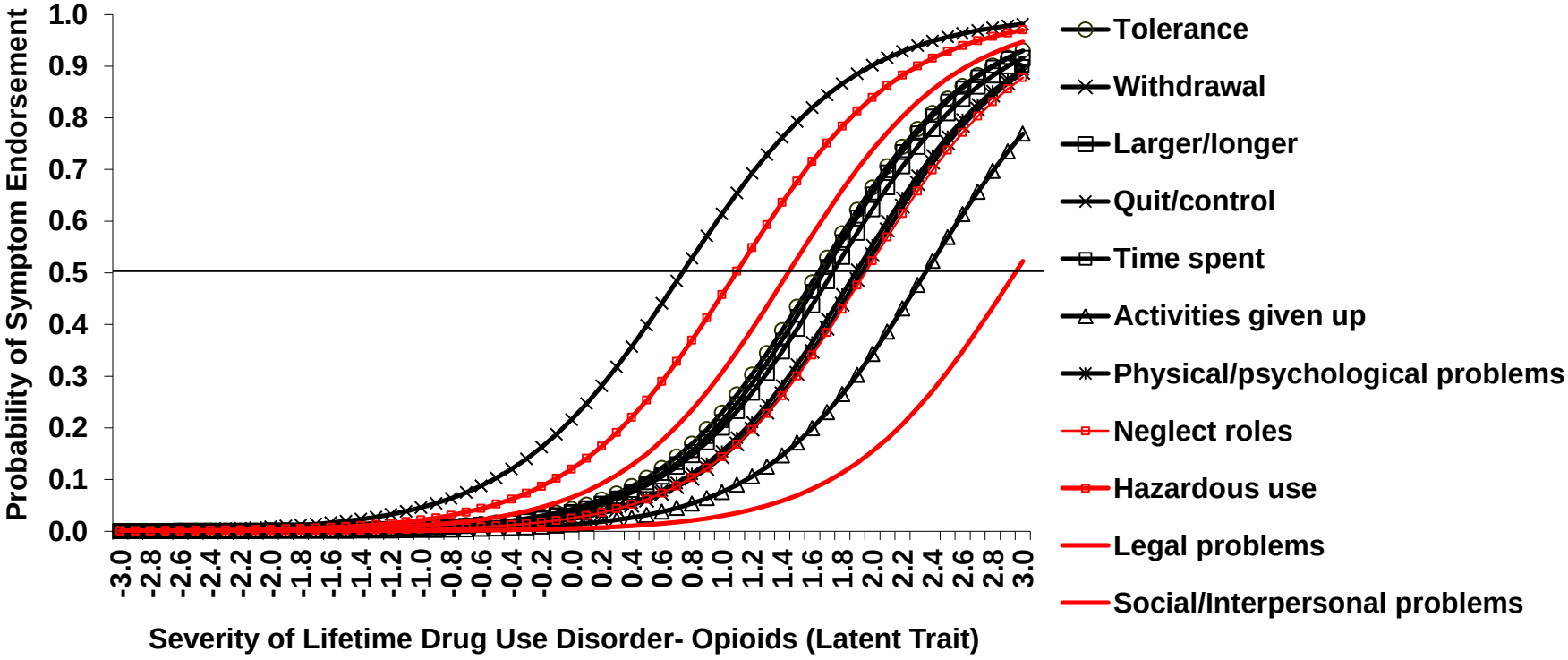
- **Reliability and validity of dependence is <u>excellent</u>**
- **Reliability & validity of abuse <u>lower, more variable</u>**
- ~50% with abuse dx'ed with only 1 criterion: hazardous use
- Diagnostic "orphans" (2 dependence criteria, no dx)
- Confusion about relationship of abuse to dependence
  - Abuse assumed to be milder than dependence
  - Abuse assumed to be prodromal to dependence
  - All cases of dependence assumed to meet criteria for abuse

Solving problems with DSM-IV abuse
a major priority for DSM-5 Workgroup

A Workgroup Analysis Method: Item Response Theory (IRT)

- Factor analyses of abuse and dependence criteria showed they formed 1 factor, or 2 highly correlated factors
- Item Response Theory analysis extends factor analysis, providing more information on severity and discrimination of each criterion
- Item characteristic curves (graphed) show relationship of abuse and dependence criteria to each other

NESARC ICC
DSM-IV Lifetime Prescription Opioid Abuse, Dependence Criteria
N=1,815 users either without prescription or other than prescribed



IRT Studies of Abuse & Dependence Criteria: Unidimensional *Across Substances, Samples, Countries* in 200,000+ Participants

Sample Type	Studies	Ns	Countries
ADULTS			
General population	17	722 - 43,093	Australia, Israel, US
Emergency room	2	5,195	Argentina, Mexico, Poland, US
Substance treatment	5	372 - 1,511	Australia, US
Genetic studies	4	496 - 9,313	US
ADOLESCENTS			
General population	4	353 - 3,641	France, US
Substance treatment	2	279 - 472	US
Mixed	2	5,587	US

Combine abuse and dependence into one diagnosis?

The Workgroup's conclusion: yes

Legal problems: drop from DSM-5?

- **Low loadings with other criteria in general population samples**
  - Alcohol: 1991-1992 U.S. national (Keyes et al., 2008)
  - Alcohol: 2001-2002 U.S. national (Saha et al, 2006)
  - Cannabis: 2001-2002 U.S. national (Compton et al., 2009)
  - Amphetamine, cocaine, prescribed opioids: 2001-2002 U.S. national (Saha et al. 2012)
- **In clinical samples (N=663), no patient lost DSM-5 SUD diagnosis when legal problems removed from the list (Hasin et al., 2012)**
- **Conclusion: drop legal problems as SUD criterion**

Craving – Add to DSM-5 SUD?

- **Advantages**
  - Unidimensional with existing criteria in several studies
  - Addition aligns DSM-5 with ICD
  - Well received by clinicians
- **Diagnostic interview questions from epidemiologic and clinical studies available, reliable, ready for use**
- **Conclusion: Add craving to the diagnostic criteria**

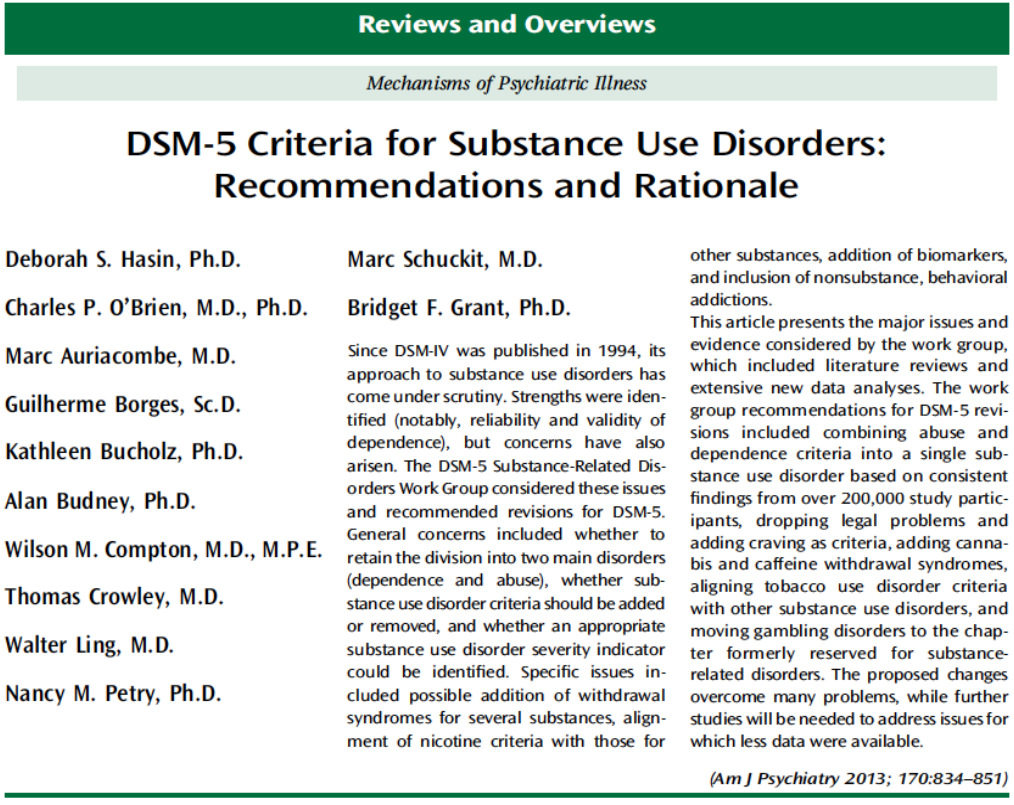
DSM-5 threshold: ≥2 criteria

- No empirical evidence for single, specific threshold in this continuous condition
- Basis for threshold therefore:
  - Diagnostic cut-off giving best agreement between rates of DSM-5 SUD and DSM-IV abuse + dependence
- Best threshold across substances: ≥2 criteria
  - In the general population
  - In clinical samples
  - In genetics studies of patients and families

Substance Use Disorder Criteria: DSM-IV and DSM-5

	DSM-IV		DSM-5 Substance Use Disorder	
	~~Abuse~~	~~Dependence~~		
Diagnostic Criteria				
Failure to fulfill obligations	X	--	X	
Hazardous use	X	--	X	
~~Substance-related legal problems~~	X	--	--	
Social/interpersonal substance-related problems	X	--	X	
Tolerance	--	X	X	
Withdrawal	--	X	X	11 criteria
Persistent desire/unsuccessful efforts to cut down	--	X	X	
Using more or over for longer than was intended	--	X	X	
Neglect of important activities	--	X	X	
Great deal of time spent in substance activities	--	X	X	
Psychological/Physical use-related problems	--	X	X	
Craving	--	--	X	
Diagnostic Threshold	**1+ criteria**	**3+ Criteria**	**Mild: 2-3 Moderate: 4-5 Severe: ≥6**	

Review of the Evidence



Reviews and Overviews

Mechanisms of Psychiatric Illness

DSM-5 Criteria for Substance Use Disorders: Recommendations and Rationale

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Since DSM-IV was published in 1994, its approach to substance use disorders has come under scrutiny. Strengths were identified (notably, reliability and validity of dependence), but concerns have also arisen. The DSM-5 Substance-Related Disorders Work Group considered these issues and recommended revisions for DSM-5. General concerns included whether to retain the division into two main disorders (dependence and abuse), whether substance use disorder criteria should be added or removed, and whether an appropriate substance use disorder severity indicator could be identified. Specific issues included possible addition of withdrawal syndromes for several substances, alignment of nicotine criteria with those for other substances, addition of biomarkers, and inclusion of nonsubstance, behavioral addictions.

This article presents the major issues and evidence considered by the work group, which included literature reviews and extensive new data analyses. The work group recommendations for DSM-5 revisions included combining abuse and dependence criteria into a single substance use disorder based on consistent findings from over 200,000 study participants, dropping legal problems and adding craving as criteria, adding cannabis and caffeine withdrawal syndromes, aligning tobacco use disorder criteria with other substance use disorders, and moving gambling disorders to the chapter formerly reserved for substance-related disorders. The proposed changes overcome many problems, while further studies will be needed to address issues for which less data were available.

(Am J Psychiatry 2013; 170:834–851)

Major <u>evidence-based</u> accomplishments of DSM-5 SUD:

- Solved abuse/dependence problem
- Simplified by collapsing two disorders into one
- Aligned criteria closely across all substances

DSM-5 Opioid Use Disorder Criteria

- Opioids often taken in larger amounts or over a longer period than intended
- Recurrent opioid use in physically hazardous situations
- Continued opioid use despite persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids
- **Opioid withdrawal syndrome (see opioid withdrawal criteria), or opioids (or closely related substance) taken to relieve/avoid withdrawal symptoms**
  - **Note: This criterion is not considered to be met for those taking opioids solely under appropriate medical supervision**
- **Tolerance: Need markedly increased amounts of opioids to achieve intoxication or desired effect or markedly diminished effect with continued use of the same amount of an opioid**
  - **Note: This criterion is not considered to be met for those taking opioids solely under appropriate medical supervision**
- A great deal of time spent in activities necessary to obtain, use, or recover from the effects of opioids
- Persistent desire or unsuccessful efforts to cut down or control opioid use
- Important social, occupational, or recreational activities are given up or reduced because of opioid use
- Recurrent opioid use resulting in a failure to fulfill major role obligations at work, school, or home
- Continued opioid use continued despite knowledge of having a persistent or recurrent physical or psychological problem likely to have been caused or exacerbated by the substance
- Craving, or a strong desire or urge to use opioids

DSM-5 Opioid Use Disorder Criteria

Opioid Withdrawal

Tolerance

“These criteria not considered to be met for those taking opioids solely under appropriate medical supervision”

Clarification: Withdrawal and Tolerance in Diagnosing DSM-5 Opioid Use Disorder

- **If patient is taking prescribed medication ONLY AS APPROPRIATELY PRESCRIBED (i.e., the frequency and amount from a single prescription), the presence of tolerance and withdrawal does NOT indicate a substance use disorder**
- **If the patient is using more than as appropriately prescribed, tolerance and withdrawal become part of the clinical picture, merit attention, and therefore ARE assessed, and counted towards a diagnosis if positive**

Assessing Addiction: PRISM-5

Psychiatric Research Interview for Substance and Mental Disorders

Computer-Assisted, Semi-Structured Interview
for DSM-5 Disorders

PRISM-5 Development

- Development funded by NIDA and NIAAA grants (Hasin, PI)
- Began in 1990s to resolve diagnostic assessment problems in substance abusers
- Highly reliable in substance, psychiatric and HIV patients (Hasin et al., 1996; Hasin et al, 2006; Morgello et al., 2006)
- Independently validated in substance abuse and psychiatric patients (Torrens et al., 2005)
- Widely used in many studies and populations, including longitudinal studies requiring fine-grained data on course of disorders over time (e.g., Hasin et al., 2002; Nunes et al., 2006; Aharonovich et al., 2005; Drake et al., 2011; Samet et al., 2013)
- Has been used as gold standard in validation studies of other measures (Mestre-Pinto et al., 2013; Cuenca-Royo et al., 2012; NESARC-III validation study, in preparation)

Examples of PRISM Publications

PRISM-5 Diagnostic Coverage

- **Substance Use Disorders**
  - Alcohol, Cannabis, Cocaine, Heroin, Hallucinogens, Nicotine, Opioids, Sedatives, Stimulants, Other substances
- **Mood Disorders**
  - Depression, Dysthymia, Mania, Hypomania, Cyclothymia
- **Anxiety disorders**
  - Generalized Anxiety Disorder, Post Traumatic Stress Disorder, Specific Phobia, Social Phobia, Panic Disorder, Agoraphobia, Obsessive-Compulsive Disorder
- **Antisocial, Borderline Personality Disorder**
- **Eating Disorders**
  - Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder
- **Psychotic Disorders**
  - Schizophrenia, Schizophreniform, Schizoaffective, Delusional Disorder, Mood Disorder with Psychotic Features, Brief Psychotic Disorder, Psychosis NOS
- **Attention Deficit Hyperactivity Disorder (ADHD)**
- **Pathological Gambling**

PRISM-5 Features

- **Time frames assessed**:
  - **Current** (last 30 days or last 12 months)
  - **Past** (prior to last 12 months)
  - **Lifetime**
- **Administered by clinicians** after structured training
  - Average length 1 hour (substance & psychiatric modules), depending on respondents' history, sections administered
- **Structured probes** ensure complete content coverage
- **Interviewer follow-up questions** clarify unclear answers
- **Branching logic** correctly routes to next questions
- **Internal logic checks** avoid interviewer/respondent error
- **Interview data easily exported** to external datasets

PRISM-5 Training, QA

- Training workshop – 2 days
  - Didactic, technical, & role-play components
  - At Columbia University in New York or elsewhere
  - Can be modified for specific study needs (e.g., adjusted to cover only specific modules)
- Post-training certification, ongoing QA & supervision
  - Recorded interviews and PRISM-5 diagnoses sent for review by PRISM supervisor
  - Supervisor certifies, or recommends additional training
  - Same review process used for QA during studies

PRISM-5 Advantages for Prospective Cohort Study

- Reliable, valid, widely used in other substance abuse studies
- PRISM data used by DSM-5 workgroup to inform decisions about DSM-5 changes for measuring addiction
- ***Only available computer-assisted interview for DSM-5 diagnoses***
- Semi-structured format assures:
  - Consistent content coverage
  - Clinician ability to probe patient responses for nuanced assessments
- Includes other substance and psychiatric disorders
- Can be enhanced to suit prospective cohort study

Potential PRISM-5 Enhancements for Prospective Cohort Study

- Change order so prescription opioids covered first
- DSM-5 OUD criteria covered for all patients, even if using medication as prescribed
- Add probes to clarify meaning of positive responses to DSM-5 OUD symptom/criteria questions, e.g., intent
- In 12-month follow-up version, add onset and offset of symptoms

Validation Study Design

- "Gold standard" would be neurobiological indicator of addiction, which does not yet exist
- Therefore, alternate study design among those who received opioid prescription for chronic pain
- Comparative prevalence: Rates of DSM-5 OUD criteria, diagnoses will be higher in high-risk than low-risk groups
  - Lower risk: pain clinic patients
  - Higher risk: addiction treatment patients
- External validators: patients with and without DSM-5 OUD will differ on
  - Family history of substance use disorders
  - Personal history of other DSM-5 SUDs

Thank you!